

Intermontanus

Published by the Utah Association of Herpetologists

Volume 4

January 1995

Number 1

NEWS & ANNOUNCEMENTS

UTAH AMPHIBIAN & REPTILE LAWS: UPDATE

As mentioned in the last newsletter, the Division of Wildlife Resources (DWR) is in the process of revising the laws covering the collection, importation, transportation and possession of amphibians and reptiles, as well as all other non-domestic animals. Most of the changes mentioned in the last newsletter have been made and the current draft contains many items and changes that were not in the previous draft. Although the laws are being reviewed by the five Regional Advisory Committees, changes are still being made by the DWR.

The amphibian and reptile sections, as they currently stand, include relatively few changes. Several native frogs have been added as controlled or prohibited from collection. These additions are long overdue, in my opinion. Two reptiles have been added as controlled for collection; the spiny softshell turtle and the snapping turtle. The DWR is still examining the status of these turtles and will likely make it legal to collect them provided they are killed on site. The collection of bullfrogs and green frogs (also introduced species) will probably also require them to be killed on site. Personally I do not believe there is sufficient threat of these animals being relocated within the state (by anyone aware of the laws) and the requirement for dead collection is unjustified. The final change for the collection section is the time period allowed for the collection/possession of noncontrolled species which has been increased to a "calendar year" rather than "any six-month period." This change makes it easier to understand without really affecting anyone interested in collecting these species.

All native species which are noncontrolled for collection have been added as controlled for importation. The DWR is considering whether this change could be enforced and they may leave these species as they currently are. The only two additions which may have an impact on people within the state are: all Great Plains rat snakes are being added as controlled (the DWR is considering making only the *Intermontanus* phase controlled), and two genera of softshell turtles have been added as prohibited under the guise that "they could survive in Utah." Unfortunately the DWR has taken the position that any animal allowed to be imported will likely be released in an area within the state which is optimum for its survival. I say this is unfortunate because the vast majority of reptile and amphibian keepers in the state are unlikely to be releasing their animals. Twenty years ago this was a concern because turtles were being sold to people who didn't really want them and who knew nothing about them. As a result many turtles were released illegally. Today, you no longer see turtles offered in department stores for a couple of dollars, thus the folks that buy them are specifically looking for a turtle as a pet.

This type of logic on behalf of the DWR is probably the most threatening aspect of amphibian and reptile laws because it could easily be used to outlaw virtually all temperate species of herps. Utah ecosystems range from the hot desert to alpine tundra. The DWR could easily assume any amphibian or reptile living in similar climates could become established in Utah and decide to prohibit their importation. The DWR is already aware that their choice of

two genera of softshell turtles is random (they have omitted the other 12 genera of the family, many of which were included in the same genus up until 1987!) and they may recommend more genera be added before this law is finalized.

The new draft also clarifies who can obtain a certificate of registration (COR) to obtain controlled and prohibited species. A new section describing a review committee which allows individuals to petition the DWR to change the status of a species, make an exception for a COR and to hear appeals when COR's are denied is also added. Although it would be preferable to have the committee made up as suggested in the model from which the Utah laws are based (this model recommends a technical advisory committee to provide advice regarding regulations and exemptions, consisting of 12 members representing scientific, commercial, humane, and other interests), this addition is a great improvement over the current situation.

Those interested in voicing their opinions about these laws have one final chance at the Wildlife Board meeting on 10 February 1995. For more information about this meeting and to obtain a copy of the proposed laws contact the DWR at (801) 538-4701.

NEW GROUP FORMED TO PROTECT ANIMAL KEEPER'S RIGHTS

In November the Utah Alternative Livestock and Pet Association (UALPA) was formed as a response to some of the changes proposed by the DWR (see above). Although only recently formed, UALPA has already enlisted more than 200 members! Impressive considering that they have not made a concerted effort to recruit members. Obviously their first issue of business is to lobby for fair and justified revisions to the DWR laws. The primary purpose of UALPA, however, is much broader and includes:

- Providing information to pet and alternative livestock owners concerning proposed and/or pending legislation that could affect their rights as animal owners.
- Publish educational material for distribution to the general public and to animal owners regarding proper animal husbandry practices.
- Support local, national, and international organizations with reasonably similar purposes, programs, and ideals.

In its first two months of operation UALPA has been very successful in lobbying the DWR. Fortunately for UtAH, UALPA has asked us to become an integral part of the organization. Breck Bartholomew is a Trustee of UALPA and there are two (of twelve) seats on the board of directors open to membership elections. Hopefully one of these seats will be filled by a UtAH member (hint, hint). Many of the revisions to the DWR laws being proposed (e.g., the review committee) came about as a response to UALPA's involvement.

Membership to UALPA is \$4.00 for individuals or \$20.00 for businesses. Of course contributions are gladly accepted. For more information, or to join, write UALPA, P.O. Box 356, Kaysville, Utah

- Notice: If you have not paid your 1995 dues, this will be your last newsletter. Those submitting dues are requested to indicate what information you wish to have included in the directory (name, address, phone number, e-mail address, and interests).

LETTER TO THE CHAIRMAN OF THE WILDLIFE BOARD

The following letter to the Chairman of the Wildlife Board was written by Louis Porras. It is included to let UtAH members know the approach UtAH has taken in trying to make the amphibian & reptile laws as equitable as possible without compromising their usefulness in the conservation of Utah's flora and fauna. The commentary Louis refers to has not been included because the DWR has already agreed to make several of the requested changes. UtAH members are encouraged to offer their own opinions by writing Ms. Williams at the address listed below.

Ms. Jody L. Williams, Chairman
Wildlife Board
50 West Broadway, Suite 800
Salt Lake City, UT 84101-2018

Dear Ms. Williams:

I have been involved in the amphibian/reptile business for over thirty years, catering primarily to the needs of museums, zoological parks, and institutions, but also involved with nearly every other aspect of the trade. Because of the nature of my business, I have had a near lifelong communication with a broad spectrum of the herpetological community, and am familiar with all aspects of state, federal, and international regulations governing the ownership, sale, and transportation of amphibians and reptiles. Aside from commercial activities, my herpetological interests are varied. I have authored or co-authored a number of scientific and popular publications, and have served in various capacities in a number of herpetological and conservation organizations. I currently hold the position of Vice President of the International Herpetological Symposium, Inc. where I oversee publication of its academic journal **Herpetological Natural History**. In Utah, I am an **advisor** to the Utah Association of Herpetologists (**UtAH**). This group was formed in 1992 for the purpose of providing a public forum to promote the education, conservation, and research of amphibians and reptiles.

Utah Association of Herpetologists

Intermontanus

Editor: Breck Bartholomew
Assistant Editor: Cynthia Lleyson
Education Committee Chair: David Webb
Meeting Coordinator: Mike Nordfelt

Membership: \$8.00/year; includes six issues of *Intermontanus*

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In addition to state membership (about 60) UtAH is associated with several dozen herpetological and/or conservation groups worldwide.

A good portion of my life was spent in Florida, where often I assisted wildlife agencies with herpetological matters, including legislation. For the past two proclamations (since moving to Utah), I was fortunate to be in a position, albeit behind the scenes, to assist the DWR with information which eventually led to the modification of each proclamation.

Several weeks ago I received a draft of the proposed regulations entitled "Collection, Importation, Transportation, and Possession of Zoological Animals," and recently I obtained an updated version. Since I am about to leave for travel in South America and expect to be gone for several weeks, I may not be back in time for important DWR proclamation hearings. For this reason I am submitting the following commentary at this time. Because of my position with UtAH, I took the liberty of discussing some of the more pressing issues with several of its members. The feedback generated from discussions, especially with Breck Bartholomew, was instrumental in the preparation of the following commentary.

When UtAH was initiated, David Ross (then working as state herpetologist for DWR) suggested that the group form an advisory committee to assist the DWR with amphibian and reptile management plans and proposed legislation. Since an official "herpetology" position in the DWR no longer exists, an advisory board, whether through UtAH or not, would be a useful tool through which the DWR could draw information. An advisory board could represent the state's major interest groups, and could identify those areas of the proclamation which are in need of review. The board could then make recommendations for remedial solutions.

Before I begin with comments on the proclamation, I wish to voice a series of concerns expressed by some of UtAH's members, as follows:

- 1) Questions were raised as to the ability of DWR to enforce some of the proposed legislation. It was suggested that no new changes should take place unless the DWR has the manpower and is prepared to enforce all aspects of the proclamation.
- 2) Many felt that some of the proposed changes were made with inadequate information or based solely on personal opinion. It is important for the DWR to justify all changes with adequate supporting data.
- 3) Concerns were raised over the length of time it takes applicants to receive COR's. The DWR should recognize the fact that wildlife movements may be limited to specific windows of time, and that applicants often are under time constraints to receive permits for research and other purposes.
- 4) The **controlled** category was established to monitor activities regarding those taxa. In recent years, however, there has been little difference in the way permit applications for controlled species have been reviewed. It appears to some that the DWR has treated both controlled and prohibited species as **prohibited** when evaluating permit applications.
- 5) In the past the DWR has taken an approach to prohibit most activities with controlled or prohibited wildlife, making it difficult for private individuals (and some professionals) to obtain COR's. It would benefit the DWR to take a more lenient, i.e., **regulatory** approach with COR requests. A prohibitive approach in dealing with COR's has a tendency to alienate potential permittees from cooperation with the DWR. Historically such an approach has not been successful in other states. It may be useful for the DWR to examine changes in herpetological regulations in other states.
- 6) The DWR should not be opposed to issuing salvage permits for controlled or prohibited amphibians and reptiles, especially for specimens found dead on roads, so long as they are to be deposited in a museum collection or used for a demonstrably worthwhile purpose.

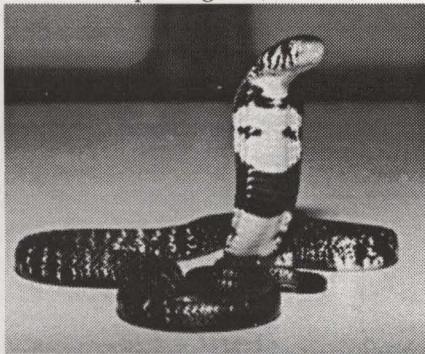
More importantly, over the years the DWR has undergone numerous changes in personnel, and the reasons pertinent to the introduction of certain legislation may have been lost in the shuffle. In some cases legislation may have been introduced to address problems relevant to a specific time period, or could have been made with the best of intentions, but with little factual (or supporting) data. Such legislation, however, continues to appear from one proclamation to the next, unquestioned and accepted verbatim by the DWR.

The unprecedented growth the herpetological community has undergone in recent years has been nothing short of spectacular. Six years ago we witnessed a major event, the first reptile breeders expo in Orlando, Florida. Each year now, there are hundreds of expos, swap meets, and trade shows in dozens of cities nationwide. About a decade ago there were a handful of reptile breeders in this country. By comparison, today there are tens of thousands of hobbyists breeding reptiles in their homes. Seven years ago there were no major hobbyist-oriented (= herpetocultural) publications. Today there are over a dozen major herpetocultural magazines and periodicals, one of which, "Reptiles" magazine, has a circulation of 80,000! And this is only the tip of the iceberg. Times have changed and change has come quickly. The DWR needs to understand the magnitude of these changes, and the ramifications which could be in store if proper steps are not taken to accommodate the needs of this growing segment of Utah's population.

My efforts with this communication are aimed toward improving the proclamation, and in helping the DWR understand the important changes which have occurred in our community in recent years. I am hopeful that this communication will begin to stimulate discussion, and bring forth the improvements necessary to bridge the gap between the DWR and Utah's growing herpetological community.

Respectfully yours,

Louis W. Porras, Zooherp, Inc. (President)
Utah Association of Herpetologists (Advisor)



NEW PUBLICATIONS

The National Biological Survey has released Fish and Wildlife Research 13, entitled *Biology of North American Tortoises*. The book contains articles from various authors on aspects of the biology of all four North American tortoises. Edited by R. Bruce Bury and Dave Germano, this book can be obtained from the Fish and Wildlife Service Publications Unit (703) 358-1711, or National Technical Information Service (800) 553-6847.

Frank Glaw and Miguel Vences recently published the second edition of their extremely popular book, *A Field Guide to the Amphibians and Reptiles of Madagascar*. The first edition sold out in six months and it is likely this edition will follow suit. The book contains 450 color and 500+ black and white photographs as well as 450+ distribution maps. Keys to most of the amphibians and reptiles are also included. Surprisingly, the book also includes chapters on

the mammals and freshwater fish of Madagascar. Suggested retail is \$69.00.

The Tortoise Trust recently published a second, expanded edition of the book, *Tortoise Trust Guide to Tortoises & Turtles*. The book is only 60 pages long, but it is packed with information about turtle care. If TFH were to publish this book it would easily be over 200 pages long. Suggested retail is \$29.00.

HEADLINE HERPS by David Webb

More Laws

*The city of Clearfield, UT has told a resident that he can't keep a pot-bellied pig as a pet because the city considers it livestock. You may ask what does this have to do with herps? In defending their ordinance City Attorney Larry Waggoner said if the city allows pot-bellied pigs into the neighborhoods, "where do we close the door?" "With exotic pets like this, where do we stop? We can't win with this thing," he said. Waggoner said Hornsby may be a good pet, and the city hasn't received any complaints about him, but owners of exotic animals such as snakes, ferrets or miniature horses can make the same argument. "Snake owners are going to say their animals are very quiet and don't make any noise," Waggoner said. [The Daily Herald, Provo, Utah, Wednesday, November 2, 1994]

*Lawmakers in Oklahoma City, OK are considering a bill that would regulate pet breeders, dealers, animal shelters and kennels in an effort to prevent inhumane treatment of animals. [USA TODAY, Thursday, December 22, 1994]

Snake Invasion

Hawaiian officials are searching for brown tree snakes after a live one was found in a Schofield Barracks warehouse. They suspect the snake came over on a boat or plane from Guam, where the reptile is blamed for wiping out nine bird species. [USA TODAY, Friday, December 23, 1994] UPDATE: Trained dogs have found no more brown tree snakes at Schofield Barracks. [USA TODAY, Friday, December 30, 1994]

Close Call

A 4-year old Indianapolis boy was hospitalized Saturday after a 13-foot pet python wrapped itself around the boy's chest and legs, cutting off circulation. Rescuers cut off the snake's head. [USA TODAY, Monday, November 7, 1994]

Toad Breeders

A 2-inch toad found only in certain parts of Albany County, Wyoming is being bred at zoos in Wyoming, Oklahoma, Colorado,

1994 Budget Summary

1993 Balance	\$152.37
1994 Income	
Membership dues	\$455.00
Donations	\$338.23
Index sales	\$458.50
Miscellaneous	\$31.00
1994 Expenses	
Printing	\$(687.32)
Postage	\$(319.95)
Miscellaneous	\$(95.60)
Balance	\$332.23

Nebraska, Texas and Ohio. [USA TODAY, Friday, November 4 & December 27, 1994] A task force is putting together teams to search for the animals this summer. They may need volunteers due to low funding. [USA TODAY, Friday, January 6, 1995]

Rattlesnake Salmonellosis

Los Angeles County public health officials reported that pills containing rattlesnake meat recently caused three deaths from salmonellosis. The pills are sold as a Hispanic folk remedy for many illnesses including cancer and acne. At least four people have been hospitalized in recent months for salmonellosis caused by the rattlesnake capsules, also known as "polvo de vibora," "carne de vibora," and "vibora de cascabel." Reported cases have dropped from a high of 30 in 1987 to an average of about 15 a year. The pills are sold through pharmacies that serve the Hispanic community, and at swap meets and botanicas. The pills contain a strain of salmonella that reptiles can carry and transmit to humans. "You could get it from handling a reptile," said Dr. Roshan, Reporter of the county Department of Health Services. She cautioned that reptiles should not be kept as pets in households with young children and people with weakened immune systems. [Deseret News, TUE/WED, December 20-21, 1994]

New Museum

The Earth Window Museum, with the largest breeding group of Egyptian desert tortoises in the USA, has opened in downtown Reno, Nevada. The museum features about 40 reptile species, several amphibians and insects, and small displays of birds and fish. [USA TODAY, Monday, November 28, 1994]

Gila Hatchlings

Two Gila monsters recently hatched at Utah's Hogle Zoo on October 30 and November 7, 1994. The article included a photo of the one hatched on Nov. 7 being held by a keeper. [The Salt Lake Tribune, Wednesday, November 9, 1994]

Errata

In the November issue article about David Van Buren's alligator I forgot to include the location. It's Miami, Florida.

INQUIRIES

Dear UtAH,

We are new snake "people." We have a Florida kingsnake, a California desert kingsnake, and an African rock python.

Can we breed a female Florida kingsnake and a male California kingsnake under the correct breeding conditions? We have never heard of this being done and don't know what the results would likely be.

Reply: The simple answer to your question is yes you can breed these snakes, but I cannot leave it at that. Before you consider breeding these snakes or artificially creating any intergrades or hybrids you should consider the ethics of such a cross. These two subspecies have evolved unique characteristics that make them very 'neat' in their own right. True, you can find many Florida and California kingsnakes which look like yours and they may seem common. This 'commonness,' however, is the result of thousands of years of selective pressures working, often in opposition, on the phenotype (characteristics) of these snakes. Each of these kingsnakes looks and behaves differently because the selective pressures in

their native ranges are not the same. Natural selection is not the only reason these snakes are different though; random mutations, genetic drift, and gene flow also influence the possible outcomes of evolution. In any case, each one of your snakes contain a unique set of alleles (alleles are the functional code of the genes); no other individual snake has ever had the exact same set of alleles as your snakes.

Your California kingsnake is recognized because it shares many alleles with other kingsnakes from California and adjacent areas. The Florida kingsnake, on the other hand, shares fewer alleles with California snakes and is recognized as being different. If you decide to cross these snakes you will artificially bring alleles together and the result will be something that could not happen naturally. This does not make wrong, just unnatural. This type of cross does have some risk though. The molecular aspects of DNA during cell division and reproduction will cause the California and Florida kingsnake alleles to mix into new combinations. Sometimes, in crosses like these, alleles which have evolved to work together are separated, causing the animal to become 'weaker.' In genetics this is called outbreeding depression and it may lead to lower viability, higher mortality, and genetic defects.

Personally, I do not think it is ethical to artificially create intergrades or hybrids (or any other mutant for that matter, including albinos). Many herpetoculturists today go so far as to breed only animals which they presume to have originated from the same population. There is another side to this argument though.

Your snakes were probably born in captivity and all of their offspring for generations to come should remain in captivity too. Thus the question becomes should you breed these animals for your own delight, to whatever you desire? In the big picture it really doesn't matter since they will never again contribute to the natural evolution of their subspecies anyway. The choice is a personal one. One you'll have to consider based on your own wants and needs as well as those aspects of the snake you believe are important. Remember, regardless of what you decide, there is neither a right nor a wrong to your decision. Good luck. (B. Bartholomew)

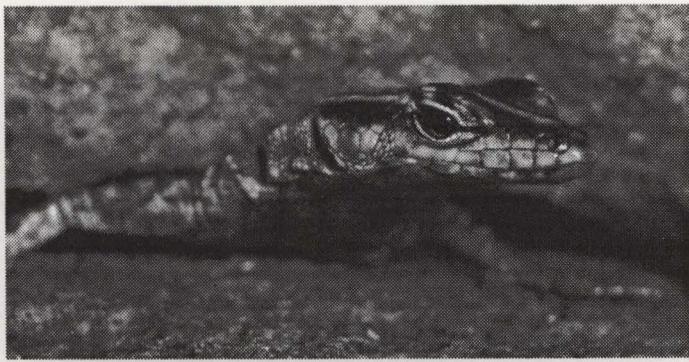
HUSBANDRY & HERPETOCULTURE

THE PLATAKKEDISSE: KNEE-HIGH TO A GRASSHOPPER

Breck Bartholomew
195 West 200 North
Logan, Utah 84321

Although I have an interest in all amphibians and reptiles, I have never seriously kept anything other than snakes. Nevertheless, people often ask me what lizards I recommend as pets. Based on what I've read, my answer usually includes leopard geckos (*Eublepharis macularius*), day geckos, (*Phelsuma*), savannah monitors (*Varanus exanthematicus*), and, if they are up for it, the spiny-tail agamas (*Uromastyx*). Personally, I would prefer the desert lizards like *Uromastyx*, that's why I include them in my list; not because they are particularly easy to care for. My affinity for desert lizards is responsible for my strong attraction to some lizards I saw recently in a couple of local pet stores, the Platakkedisse or flat lizard (*Platysaurus*).

When I first saw a flat lizard a couple of months ago, I was dumbfounded. There sitting in a small inconspicuous cage was one of the strangest, most beautiful lizards I have ever seen. They were obviously sexually dimorphic with the male being very brightly colored with a vivid orange tail, bluish head and blue on the body. Three thin stripes were on the body and the belly was nearly black. The female was primarily brown with three thin stripes on the body. What was even more stunning was their extreme flatness. I didn't have a clue what they were. I couldn't even tell what family they belonged to! To top it off, the price tag was very low (ca. \$20.00). These were strange lizards indeed.



When I arrived home I instantly set out to determine what these lizards were. Fortunately it was an easy task. I looked up flat lizard in the "Atlas" (Obst et al. 1988), and found it straight away. The lizards I had seen were in the family Cordylidae, but with small granular scales instead of the large keeled or spiny scales usually seen in the family. *Platysaurus* is the genus they belong to and they were probably either *P. capensis* or *P. intermedius*.

I had nearly forgotten about these incredible lizards when I found myself dumbfounded by them once again. I was standing in another pet shop looking at a couple of very nice looking flat lizards. The bright orange tail was even brighter and the blue more extensive than the previous lizards I had seen. I determined then and there that I will be keeping some of these lizards in the near future. First, however, I need to find out more about them and their requirements.

This article summarizes what I have been able to find out about flat lizards (genus *Platysaurus*) and their biology. Requirements for captive care for these lizards is sparse, so I have included my plans to house, feed, and hopefully breed these lizards. Keep in mind, however, this is coming from some one who has never kept lizards before.

Flat lizards, also known as flatties, platys, or Platakkedisse (Afrikaans) belong to the family Cordylidae which is characterized by large symmetrical head shields with osteoderms, body often depressed, eyes and eyelids well developed, external ear openings visible, and the tongue is stout (Branch 1988). Cordylidae is the only lizard family restricted to Africa and Madagascar. The family is divided into two subfamilies, Gerrhosaurinae and Cordylinae. *Platysaurus* belong to the Cordylinae which is characterized by having long papillae on the tongue and strongly keeled scales arranged in rings on the tail. All members of the subfamily are ovoviparous except *Platysaurus* which are oviparous (Branch 1988).

Broadley (1974), probably the authority on *Platysaurus*, describes these lizards as rupicolous, meaning they live on walls or rocks. Their extreme flatness, 3-5 mm thick, allows these lizards to seek refuge in the smallest of cracks (Patterson 1987). In the wild, flat lizards are restricted to rock outcrops, and as a result their populations are highly fragmented. This fragmentation has caused much confusion for taxonomists and their classification is still in question (Branch 1988). Welch (1982) recognized 11 species, but more have been found since Welch's publication (Branch 1988).

Perhaps because of the highly fragmented populations, flat lizard densities are often quite high (Pienaar 1966). The brightly colored males vigorously defend both a territory and a harem (Patterson 1987). Breeding is seasonal, occurring in early summer (November-December) (Broadley 1974). Clutches of two large parchment-shelled eggs are laid in crevices containing detritus material (Broadley 1974). *Platysaurus intermedius rhodesianus* eggs have been found deposited in communal nests of 10-30 eggs (Broadley 1974). Whether flat lizards seek out communal nesting sites or nest communally because adequate nesting sites are limited has yet to be determined.

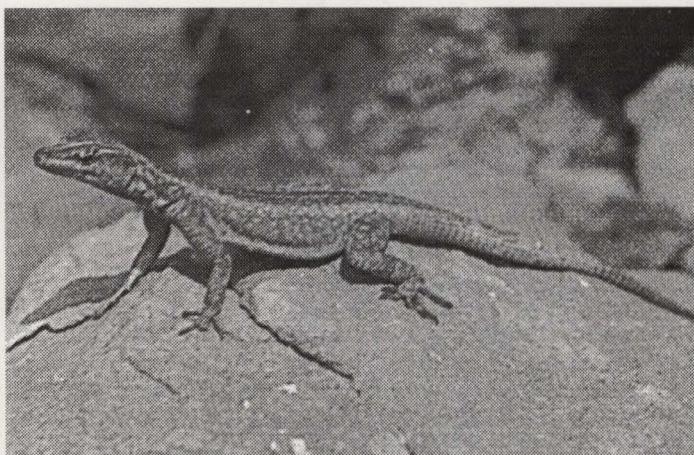
The diet of flat lizards consists primarily of insects, although some species also eat plant material (Branch 1988).

Most authors lump the captive care of *Platysaurus* with other cordylids (de Vosjoli 1994; Mattison 1991; Mattison 1992). Basically, flat lizards require a desert vivarium (see de Vosjoli 1994) with a blacklight and hot spot for basking. Adequate retreats should be available. The diet should consist of insects and a vitamin/mineral supplement is necessary. Water can be provided in a dish, but occasional misting is also suggested. Obst, et al. (1988) recommend providing plenty of vertical surface area, because these lizards may be hesitant to venture onto horizontal surfaces. Mattison (1991) states that captive breeding of *Platysaurus* is virtually unheard of.

More information about the biology of these lizards is available, but I have been unable to obtain copies of the papers thus far. Nonetheless, This information should be enough for me to get a good start on keeping these lizards with the intent of eventually breeding them (perhaps I'm dreaming, but that's okay).

Ideally, a large out-door cage could be provided, but since I lack the space for such a cage I'll have to settle with a much smaller indoor cage. Since these lizards are gregarious, I plan to obtain at least two males and five or six females. With two males the cage must be large enough to contain two territories, or two cages will need to be available. In either case, the cage(s) must be relatively large. Assuming these lizards do in fact prefer vertical surfaces, the cage will be more like a deep bookshelf than the typical herp vivarium. Using natural cork tiles to cover the back of the cage, and providing several crevices and ledges for the lizards to hide and forage should increase the usable surface area manyfold. The bottom of the cage could easily be filled with soil, rocks, and plants to make it more aesthetically pleasing. At least two basking lamps must be provided, one for each male. Other lights will include a full spectrum light (for UV-A) as well as a lamp which provides adequate UV-B light. The use of UV-B lights can be difficult and the recommendations of Gehrmann (1987) and Moyle (1994) should be followed. Shallow water dishes will be provided at the bottom of the cage as well as on one of the ledges. One of the crevices will lead to a nesting box which can be accessed for egg removal.

Once the lizards are obtained, pass a health inspection and



quarantine they will be released into the cage. Careful monitoring should help determine what adjustments need to be made. Initially the ambient temperature will reach 25-30°C during the average summer day and allowed to drop to 14-20°C during the night. Winter temperatures will be adjusted to about 20°C day and 7-10° night. This temperature range is approximately that of their natural habitat. Photoperiod will also be adjusted to match the temperature cycle. The cage will occasionally be misted in the morning to simulate dew, or during the day (more vigorous misting) to simulate rain, based on the average number of rainy days in their natural habitat.

A diet consisting primarily of crickets (dusted and or gut loaded

as necessary), wax worms, and other commercially available insects will be offered. An effort will be made to present a variety of acceptable insects rather than maintaining a monotypic diet. Plants (flowers, leaves, and seeds) will be offered as they are available. The diet will be adjusted depending on the preferences of the lizards and the nutritional value of the diet.

Of course these husbandry techniques will be modified as necessary in order to obtain the final goal of breeding these lizards. It should be obvious that I will not be recommending these lizards as pets, especially for the beginner, which may sound odd since I'm a beginner myself. Nonetheless, if you happen to be in the vicinity of a pet store, go in and see if they have any of these fascinating lizards. But watch out, you might become hooked on them too.

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BOOK REVIEWS

AND NO BIRDS SING: THE STORY OF AN ECOLOGICAL DISASTER IN A TROPICAL PARADISE

Mark Jaffe. 1994. Simon & Schuster, New York, 283 pp.

Bird populations on Guam were known to be declining as early as the 1960's, but it wasn't until the late 1970's and early 1980's that anyone bothered to try and save the birds. In 1982 Bob Beck was hired to protect the birds and Julie Savidge began her dissertation work to figure out the cause of the declines. In *And No Birds Sing* Mark Jaffe chronicles the research and experiences of Beck and Savidge as well as many other people who became involved in trying to save Guam's birds.

Julie Savidge's dissertation was designed to examine four possible causes for the bird declines: habitat destruction, hunting, disease, or predation. Habitat destruction was a distinct possibility, but the distribution of the remaining birds didn't fit with this hypothesis. Birds had disappeared from some pristine areas yet they still occurred in some altered areas. Hunting was easily eliminated as a possible cause for the bird declines; leaving disease and predation. Guam didn't appear to have any new predators of any significance so disease was the prime suspect. Savidge received funding to study the disease hypothesis and began a series of experiments to test this hypothesis.

In addition to her research, a survey of Guam residents was completed which indicated the introduced tree snake (*Boiga irregularis*) may actually be a significant problem. Savidge also recognized the number of power outages caused by the snake was increasing. As Savidge became more and more intrigued by the possibility that *B. irregularis* was responsible for the bird declines, the Fish & Wildlife Service was convinced disease was the cause. Since her funding was for a disease study, Savidge had to pursue her predation hypothesis opportunistically.

Throughout the book some unusual aspects of these introduced snakes are mentioned. *Boiga irregularis* in Guam have expanded their niche to include arboreal, terrestrial, and fossorial habitats. Their diet has expanded to include most native vertebrates that are of the appropriate size, and they attempt to eat items far too large to swallow (i.e., children). Particularly unusual are the accounts of snakes trying to get pieces of chicken off a barbecue and snakes eating raw hamburger balls! It is clear that tree snakes on Guam offer a unique test to several hypotheses in evolutionary ecology.

The book also discusses the problems associated field studies on snakes. From trying to capture snakes to estimating their abundance, the book relates many attempts to obtain reliable data. Anyone

interested in field studies of snakes will find this book informative.

Although much of the book focuses on the avian problems on Guam and efforts to capture enough birds for a captive breeding program, a significant amount of the book is about the source of the problem, the tree snake. The book also relates the down side of science, from funding agencies insisting the disease hypothesis be thoroughly examined even though it is clearly not a major cause of the declines, to peers boisterously casting doubt on your research.

I hope individuals who think animals can simply be relocated or captive bred for conservation will read this book. Jaffe clearly illustrates many of the problems associated with these conservation strategies.

In summary, this book relates the history of the tree snake on Guam in a clear and easy to read fashion. If you liked Kathryn Phillips' book *Tracking the Vanishing Frogs* you will probably like this book too. Jaffe takes a less active, more historical approach, but the two books succeed in supplying a lot of information in a understandable form. All in all, an enjoyable read.

Breck Bartholomew

CAPTIVE MANAGEMENT AND CONSERVATION OF AMPHIBIANS & REPTILES

James B. Murphy, Kraig Adler, and Joseph T. Collins (eds.). 1994. Society for the Study of Amphibians and Reptiles, Lawrence, Kansas. 408 pp.

The Society for the Study of Amphibians and Reptiles (SSAR) has long been involved in promoting knowledge about the captive management of herp species. In 1978 SSAR held a symposium titled "reproductive biology and diseases of captive reptiles" which formed the basis for a book with the same title (Murphy and Collins, 1980). This book was an important foundation for the rapidly growing interest in herpetoculture and remains important today. In 1991 SSAR and the Herpetologists League (HL) sponsored the "Captive Management and Conservation of Amphibians and Reptiles" symposium which forms the bulk of this book. During the 13 years between these two symposia, knowledge of herpetoculture techniques has increased dramatically. The need for conservation efforts has also increased many fold, as natural habitats are destroyed at an ever accelerating rate. This book offers a diverse look at the practice of herpetoculture as it relates the maintenance of animals over extended an period of time and to conservation efforts.

The book clearly illustrates that current conservation programs using captive breeding as a strategy are controlled by zoos, aquariums, and conservation organizations. Several chapters point out difficulties in getting the herpetocultural community involved in conservation efforts, but one chapter address this issue specifically. Herpetoculturists who justify their hobby as a conservation tool should definitely read this book from cover to cover. Other herpetoculturists, concerned more with meeting the varied needs of their animals will find vast amounts of valuable information in specific chapters and the papers referenced in them.

The first section of the book gives a brief overview of the career of Roger Conant, who the book is dedicated to, followed by an introduction and two chapters, one about conservation and the other on the role of zoos and aquariums. These chapters offer a good overview, but the rest of the book contains the information most readers will value.

The second section contains eight chapters under the heading of "management issues." These issues pertain to captive management rather than management of wild populations. Included are excellent chapters on the effects of temperature, light requirements, chemoreception, nutrition and lineage senescence. Ian R. Swingland's chapter, "International conservation and captive management of tortoises," was particularly informative, although its inclusion in this section is curious when compared to the focus of

the other chapters. Another important chapter in this section deals with the veterinary considerations involved in the acquisition and release of animals.

The following eight chapters cover the section on reproductive biology. Individual chapters cover reproductive patterns, control and physiology, induction, ethics, phenotypic plasticity, clutch size manipulation, incubation, and commercially important reptiles. Overall these chapters are good overviews of the topics and some are particularly important to the herpetoculturist.

The next two sections focus on specific programs for amphibians and reptiles. These sections will probably prove to be the most utilized by herpetoculturists, however the section discussing management issues raises more specific questions for herpetoculturists to contemplate. Nonetheless, with two chapters on dendrobatiid care and breeding, another two on *Phelsuma*, others on chameleons, chuckwallas, and boas and pythons these sections offer invaluable information for the captive management of many taxa. Rather than offer a recipe of how to breed these animals, the chapters in this section discuss specific programs which vary from field work with artificial refuges, to educating people about the importance of their native herpetofauna, and even genetic considerations needed when captive breeding programs are used in conservation efforts.

The final two sections examine future directions of herpetoculture and conservation, including the role of the private sector, and special techniques. My impression was that education of the general public about the diversity of animals and their habitats is of primary concern for the future. If we do not start preserving more, larger sections of functioning ecosystems, there may not be a need for our conservation efforts. Instead, the next symposium by SSAR may focus of the captive preservation of amphibians and reptiles (meaning we can only preserve them in captivity because all of the natural habitat has been degraded). The final chapter/section offers several safe ways to capture and restrain captive crocodilians. The information is valuable, but I certainly hope I never get to use it to capture a large crocodilian!

All in all this book will certainly prove to be a valuable source of information for years to come. SSAR's decision to print 3,500 rather than the usual 2,000 should prove to be a wise decision. All serious herpetoculturists should consider purchasing a copy of this book; it will prove to be a valuable reference. Many of the papers cited, however, may prove to peak your curiosity with little chance of fulfillment. This certainly isn't because the cited papers are not of high quality, rather because they are published in publications which are difficult to obtain, especially in Utah. My only complaint about this book is the time delay between the symposium in 1991 and its publication date, late 1994. Many of the chapters refer to future plans and indicate goals to be completed by 1995. Well, it's 1995, I just received the book, and I'm wondering how these projects are working? Don't get me wrong, the sheer amount of cooperation and time involved in compiling this work accounts for the time delay. The book is certainly not dated, already.

LITERATURE CITED

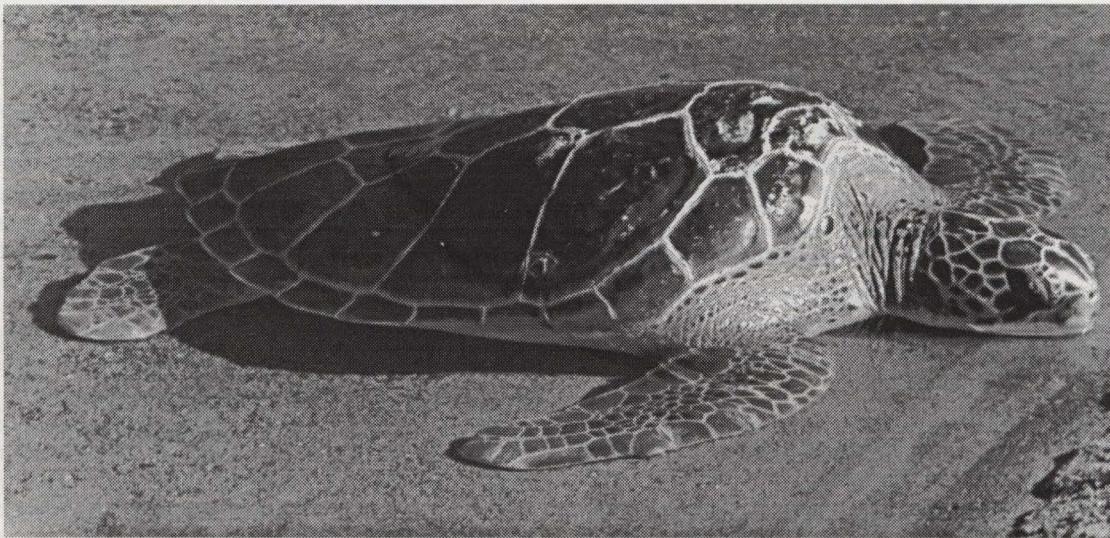
MURPHY, JAMES B. and JOSEPH T. COLLINS. 1980. Reproductive Biology and Diseases of Captive Reptiles. SSAR, Lawrence, Kansas. 277 pp.

Breck Bartholomew

CLASSIFIED ADS

Wanted: A native garter snake, western yellow-belly racer, or desert striped whipsnake for use in a talk at Red Butte Gardens on February 15, 1994. If you have one of these snakes, please call Bob Nohavec at (801) 584-1565 ext. 1068.

Next Meeting: Thursday, 2 February 1995 at 7:00 pm in room 140 of the University of Utah's JTB building. Harold Hirth will present a talk titled "**Ecology of the Most Valuable Reptile—The Green Sea turtle.**" After the talk there will be a drawing for the book *The Lizard Keeper's Handbook*. This month's raffle will be for a 5' boa constrictor. The snake has a couple of old injuries, but it eats well and is very docile. Tickets will cost \$1 each and you may purchase as many as you like. Please note this meeting will not be held in the Biology building. A sign with directions to the JTB building will be posted on the north door of the Biology building and on the door to room 212. Sorry for the inconvenience. **See you there!**



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